


SAFETY COMMISSION AGENDA STATEMENT

Item _____
Meeting Date 11/5/14

ITEM TITLE: Resolution of the Safety Commission of the City of Chula Vista Approving the Installation of an All-Way Stop at Auburn Avenue and Elmhurst Street

SUBMITTED BY: Principal Civil Engineer 

Due to high number of school pedestrian users, City staff received a request from a citizen for the installation of an all-way stop at the intersection of Auburn Avenue and Elmhurst Street. Staff has conducted a study of the intersection and has included our findings in this report to the Safety Commission for consideration.

RECOMMENDATION:

That the Safety Commission accept staff's report and adopt a resolution concurring with staff's recommendation to install an all-way stop control at the intersection of Auburn Avenue and Elmhurst Street.

DISCUSSION:

City Staff received a request from a citizen requesting the installation of an all-way stop at the intersection of Auburn Avenue and Elmhurst Street. Staff conducted an all-way stop warrant study per Council Policy #478-03, the results of which are presented below.

When evaluating an intersection for all-way stop control, various factors are studied to determine the need for an installation. The physical factors (topography) of an area, vehicle volumes and speeds, roadway alignment (vertical and horizontal curves), accident history, pedestrian volumes and available sight distance are all taken into consideration.

The intersection of Auburn Avenue and Elmhurst Street is a T-intersection, with the stop control on Auburn Avenue. Auburn Avenue and Elmhurst Street are 36-foot wide residential streets, with two lanes of travel (one per direction). The speed limit at these streets is prima facie 25 mph. The Average Daily Traffic (ADT) for Auburn Avenue is 2,259. The Average Daily Traffic for Elmhurst Street approaching westbound and eastbound is 1,471 and 868 respectively. This intersection is located approximately 130 feet west of Tiffany Elementary School Boundary. Thus, school arrival and dismissal times are busy with pedestrians and vehicles traffic.

A review of the accident history for this intersection shows no reported accidents correctible by all-way stop control that occurred within a single 12-month period prior to the investigation date.

All-Way Stop Warrant Study:

Physical Conditions:

The following table shows the existing conditions for the streets at this intersection:

Street	Auburn Avenue	Elmhurst Street
Width	36'	36'
ADT (Year) Approaching only	Southbound = 2,259 (2014)	Eastbound = 868 (2014) Westbound = 1471 (2014)
Exist. Speed limit	Prima Facie 25 mph	Prima Facie 25 mph
Controlled approach	Controlled	Uncontrolled
<u>Number of Lanes</u>	One lane in each direction	One lane in each direction
<u>Striping</u>	Centerline stripe and yellow crosswalk	Centerline stripe east of the intersection only
On-Street Parking	Allowed	Allowed
Classification	Local Unclassified	Local Unclassified
Vertical Alignment	N of int., 2.58% grade	E of int., 4.98% grade W of int., 4.98% grade
Horizontal Alignment	Tangent	Tangent
Other conditions	Residential	Residential, Tiffany Elementary east of the intersection

An all-way stop warrant evaluation was conducted and the subject intersection was awarded a total of 49 points based on the following conditions:

Accident History: (0 points assigned out of a maximum of 25 points)

- 0 point was assigned because there were no correctible accidents prior to the investigation date.

Unusual Conditions: (12 points assigned out of a maximum 21 points)

- 5 points were assigned for being 250' from a school
- 7 points were assigned for being within 600' from a suggested route to school.

Pedestrian Volume: (20 points assigned out of a maximum 20 points)

- 20 points were assigned because 51 pedestrians were observed crossing Elmhurst Street between 2:30 and 3:30pm on 8/20/2014.

Traffic Volume: (7 points assigned out of a maximum of 24 points)

- 7 points were assigned for the following hours:
- 3 points were assigned for 8:00am
- 1 point was assigned for 2:00pm
- 3 points were assigned for 3:00pm

Traffic Volume Difference: (10 points assigned out of a maximum 10 points)

- 10 points were assigned because of the intersection volume ratio of 153.6 %.

Intersection Sight Distance:

When investigating sight distance measurements, field measurements are compared to the required stopping sight distance values. Motorists traveling on Auburn Avenue, wishing to enter Elmhurst Street have 355' and 259' of available sight distance when looking toward eastbound and westbound traffic, respectively. This measured sight distance is adequate for the prima facie speed of 25 mph. (150' of stopping sight distances are required).

CONCLUSION:

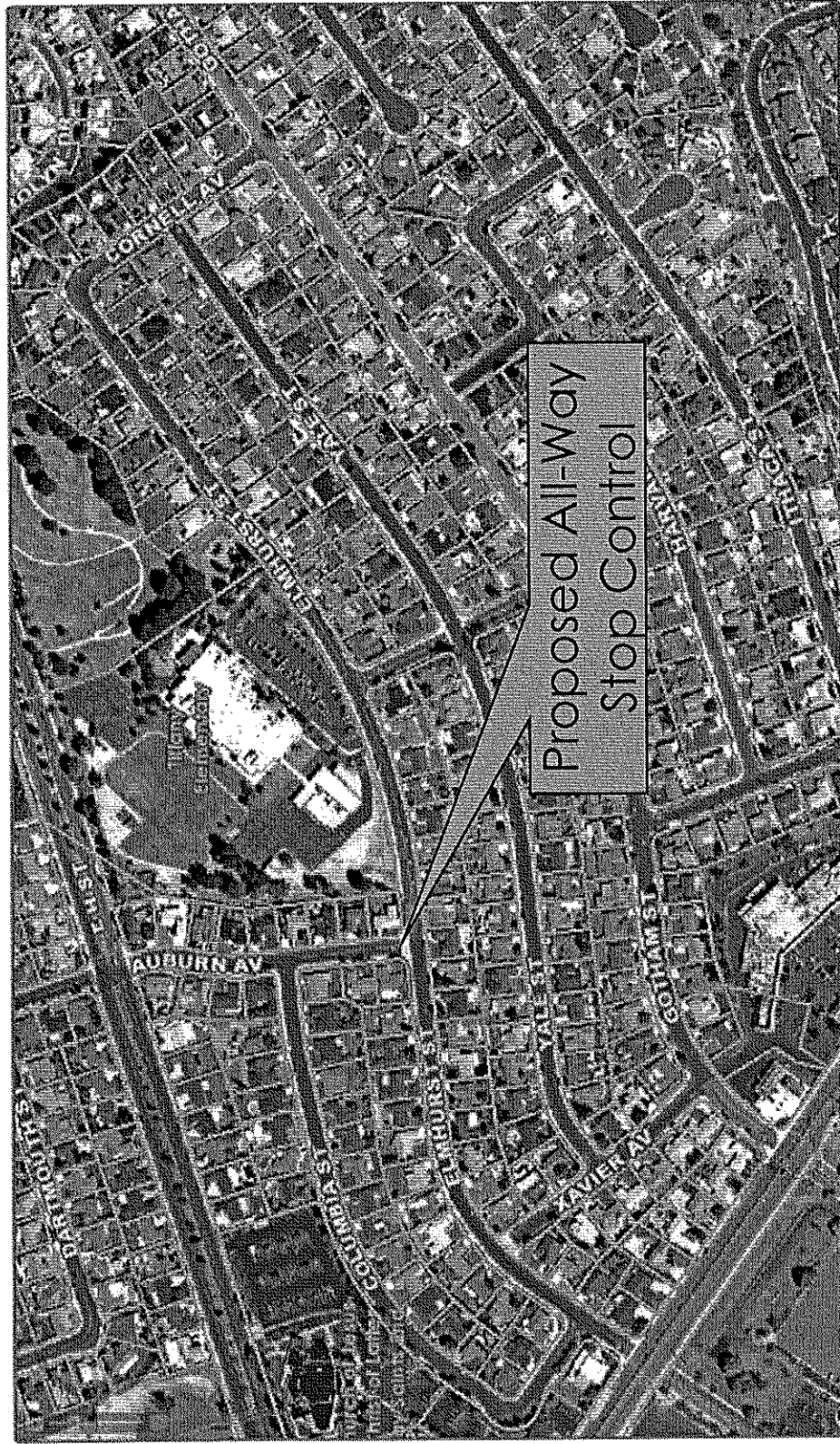
The intersection of Auburn Avenue and Elmhurst received a total of 49 points out of a possible 100 points, where a minimum of 45 points are required to justify the installation of an all-way stop control. Therefore, staff recommends the installation of the all-way stop at this intersection.

FISCAL IMPACT:

The estimated cost for the installation of signs, centerline stripe west of the intersection on Elmhurst Street, stop bars stripe, and pavement legends at the intersection of Auburn Avenue and Elmhurst Street is \$1200. This cost will be funded by an existing Traffic Engineering Capital Improvement Project, TF-332, Signing and Striping Program.

Attachments: Location Map
 All-Way Stop Study

Location Map



Disclaimer: Map and parcel data are believed to be accurate, but accuracy is not guaranteed. This is not a legal document and should not be substituted for a title search, appraisal, survey or zoning verification.

1 inch = 347 feet
10/21/2014

ALL-WAY STOP WARRANT SUMMARY

LOCATION	Auburn Avenue and Elmhurst Street		PAGE
DATE	09/11/2014		1 OF 6
POLICY NUMBER	478-03	EFFECTIVE DATE	03/06/2001

GENERAL

Points are assigned to each of these warrants. The total points possible are 100. The installation of an all-way stop control is justified with a minimum of 45 points, unless:

Case 1:

If Caltrans' criteria is met, the point system is not applicable.

Case 2:

If any of the five criteria is met to the extent of 100% an all-way stop control intersection may be warranted even though the minimum number of points is not accumulated.

Criteria 3 - Pedestrian Volume met 100%

Case 3:

If the following conditions are met:

- (a) The street to be controlled is within a residence district as defined in Section 515 of the California Vehicle Code, and
- (b) The street to be controlled is classified a collector or is functioning as a collector, and
- (c) The subject intersection is not within 600 feet from the nearest controlled intersection along the collector, and
- (d) There is a parallel arterial highway that can be used as an alternative route, then

The subject intersection shall receive a bonus of 10 points.

POINTS: _____

ALL-WAY STOP POINT SYSTEM CRITERIA:

1) ACCIDENT WARRANT: (25 points)

Five Points are assigned for each accident susceptible to correction by an all-way stop control during any 12-month period prior to the investigation date.

Total number of accidents correctible by all-way stop: 0

(Maximum 25 points)

POINTS: 0

2) UNUSUAL CONDITION WARRANT: (21 points)

- 1) Adjacent to school, fire station, playground, senior center and/or amusement park.
(7 points maximum)

a) within 100' of the intersection.

b) between 101'-250' from the intersection.

c) between 251'-400' from the intersection.

d) within 500' of the intersection.

5 pts

7 points

5 points

3 points

1 point

ALL-WAY STOP WARRANT SUMMARY

LOCATION	Auburn Avenue and Elmhurst Street		PAGE
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- 2) Any visibility obstruction including horizontal and/or vertical curves which result in limited stopping sight distance based on either the posted speed limit or the 85% tile speed, whichever is higher.
(7 points maximum)

$$\frac{259}{150} \times 100 = 173\% \geq 100\% \quad 0 \text{ pts}$$

- | | |
|---|----------|
| a) provides for less than 40% of the required sight distance. | 7 points |
| b) provides for less than 50% of the required sight distance. | 6 points |
| c) provides for less than 60% of the required sight distance. | 5 points |
| d) provides for less than 70% of the required sight distance. | 4 points |
| e) provides for less than 80% of the required sight distance. | 3 points |
| f) provides for less than 90% of the required sight distance. | 2 points |
| g) provides for less than 100 % of the required sight distance. | 1 point |

- 3) An intersection leading to an arterial from an interior (circular) collector. 0 pts

- 4) Intersection with steep grades within 500' from the intersection on the downhill approach.

- | | |
|--------------------------|----------|
| a) greater than 9% grade | 7 points |
| b) greater than 8% grade | 5 points |
| c) greater than 7% grade | 3 points |
| d) greater than 6% grade | 1 point |

- 5) Intersection is on "Suggested Route To School" and no other controlled crossing is located within 600'.
(7 points maximum)

- | | | |
|--|-------|----------|
| a) intersection is 300' from school grounds. | 7 pts | 7 points |
| b) intersection is 400' from school grounds. | | 5 points |
| c) intersection is 500' from school grounds. | | 3 points |
| d) intersection is 600' from school grounds. | | 1 point |

- 6) High approach speeds.

- | | | |
|---|-------|----------|
| a) prevailing speeds are up to 5 mph higher than posted speed. | 0 pts | 1 point |
| b) prevailing speeds are up to 10 mph higher than posted speed. | | 4 points |
| c) prevailing speeds are more than 10 mph higher than posted speed. | | 7 points |

- 7) Adjacent to bus stop
Public mailbox
School bus drop-off

- | | |
|--|----------|
| | 2 points |
| | 2 points |
| | 7 points |

0 pts

(Maximum 21 points)

POINTS: **12**

ALL-WAY STOP WARRANT SUMMARY

LOCATION	Auburn Avenue and Elmhurst Street			PAGE
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3) PEDESTRIAN VOLUME (20 points)

Consideration is given to large numbers of pedestrians crossing the major street during the busiest hour of an average day.

Peak Hour: 2:30 - 3:30

Number of Pedestrians: 51

Pedestrians crossing major street, Total during the peak pedestrian hour

Volumes:	1-10	11-20	21-30	31-40	41-OVER
Points:	4	8	12	16	20

(Maximum 20 points)

POINTS: 20

4) TRAFFIC VOLUME (24 points) *

Points are dependent upon the magnitude of vehicular volumes entering the intersection during the eight busiest hours of an average day.

Traffic Counts (circle eight highest hour volumes):

DIRECTION	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	TOTAL
NB																
SB	102	190	301	110	77	124	124	98	205	229	128	66	137	125	91	2107
SUBTOTAL	102	190	301	110	77	124	124	98	205	229	128	66	137	125	91	2107
EB	24	52	127	49	38	65	45	41	63	74	48	50	63	38	34	811
WB	64	75	308	74	67	79	70	54	83	266	83	56	49	38	33	1399
SUBTOTAL	88	127	435	123	105	144	115	95	146	340	131	106	112	76	67	2210
TOTAL	190	317	736	233	182	268	239	193	351	569	259	172	249	201	158	
POINTS			3						1	3						

-3 POINTS ARE ASSIGNED PER HOUR WHEN TOTAL ENTERING VEHICULAR VOLUMES EXCEED 500 AND MINOR STREET VOLUMES (INCLUDING PEDESTRIANS) EXCEED 200.

-2 POINTS ARE ASSIGNED PER HOUR WHEN TOTAL ENTERING VOLUMES EXCEED 500 BUT MINOR STREET VOLUMES ARE LESS THAN 200, BUT MORE THAN 100.

-1 POINT IS ASSIGNED PER HOUR WHEN TOTAL ENTERING VEHICULAR VOLUMES EXCEED 500 BUT MINOR STREET VOLUMES ARE LESS THAN 100.

-1 POINT IS ASSIGNED PER HOUR WHEN TOTAL ENTERING VEHICULAR VOLUMES DO NOT MEET 500, BUT MINOR STREET VOLUMES EXCEED 200.

In residence districts as defined by Section 515 CVC, if the 85th percentile approach speed of the major street exceeds 35 miles per hour, the minimum vehicular volume warrants is 70% of the above requirements.

- Elmhurst St (the major street) and Auburn Ave speeds do not exceed 35 mph.

(Maximum 24 points)

POINTS: 7

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5) TRAFFIC VOLUME DIFFERENCE (10 POINTS)

All-way stops operate best when the major and minor street approach traffic volumes are nearly equal. Points shall be assigned in accordance with the following table:

$$\begin{array}{l} \text{*24-Hour Minor St. Approach Volumes} \\ \text{*24-Hour Major St. Approach Volumes} \end{array} \times 100 = \frac{2,259}{1,471} \times 100 = 153.6\%$$

<u>PERCENTAGE</u>	<u>POINTS</u>
95-100	10
85-94	9
75-84	8
65-74	7
55-64	6
45-54	5
35-44	4
25-34	3
15-24	2
5-14	1
0-4	0

(Maximum 10 points)

POINTS: **10**

*For T-intersections, the percent is the ratio of the minor street approach volume to the highest single leg approach volume on the major street multiplied by one hundred.

CALTRANS CRITERIA (Chapter 4 CalTrans Traffic Manual)

Any of the following conditions may warrant a multi-way STOP sign installation, regardless of the point system:

- 1) Where traffic signals are warranted and urgently needed, the multi-way stop may be an interim measure that can be installed quickly to control traffic while arrangements are being made for the signal installation.
- 2) An accident problem, as indicated by five or more reported accidents within a 12 month period of a type susceptible to correction by a multi-way stop installation. Such accidents include right- and left-turn collisions as well as right-angle collisions.
- 3) Minimum traffic volumes - The total vehicular volume entering the intersection from all approaches must average at least 500 vehicles per hour for any 8 hours of an average day, and the combined vehicular and pedestrian volume from the minor street or highway must average at least 200 units per hour for the same 8 hours, with an average delay to minor street vehicular traffic of at least 30 seconds per vehicle during the maximum hour, but when the 85th percentile approach speed of the major street traffic exceeds 40 miles per hour (**), the minimum vehicular volume warrant is 70 percent of the above requirements.

(**) This speed applies only to CalTrans Criteria

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LOCATION	Auburn Avenue and Elmhurst Street		PAGE
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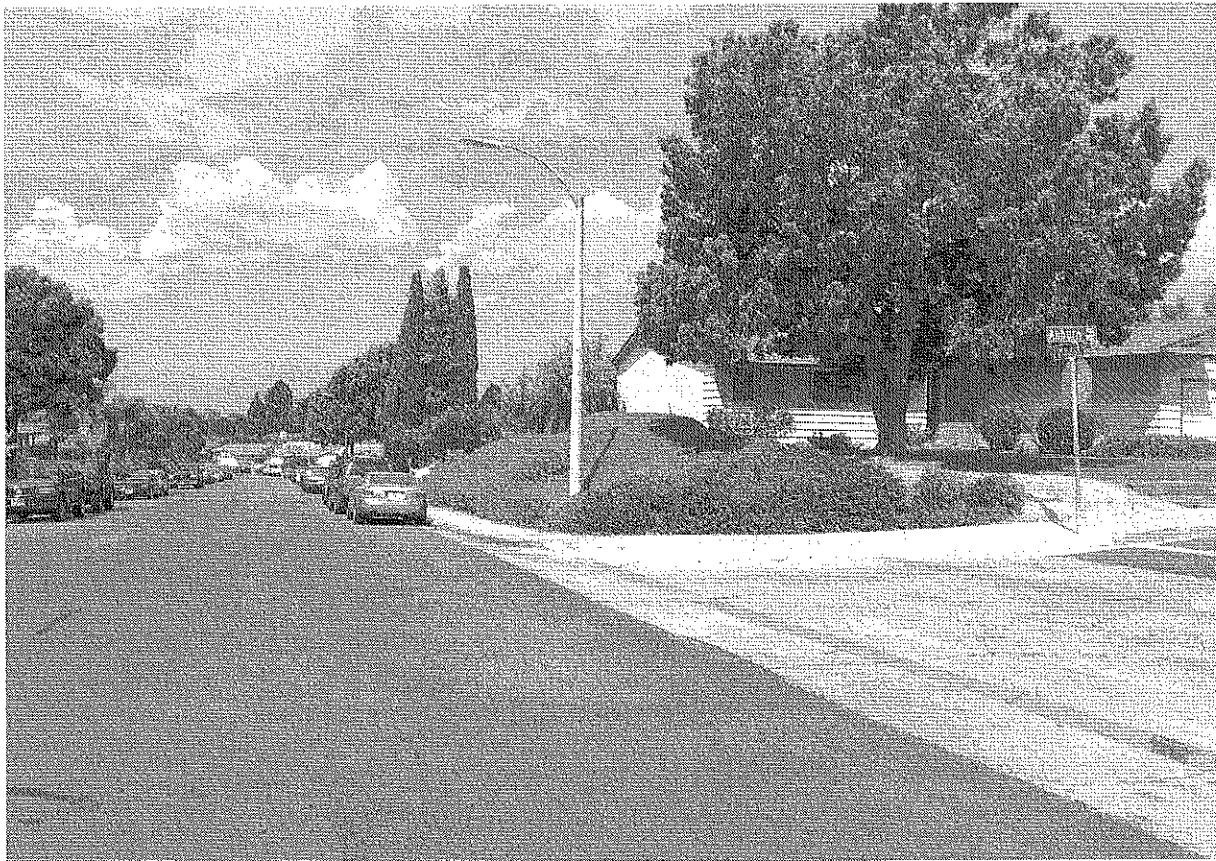
ALL-WAY STOP SUMMARY

INTERSECTION: Auburn Avenue Elmhurst Street
(Major) (Minor)

DATE INVESTIGATION WAS COMPLETED: August 25, 2014

TOTAL SCORE: 49 points out of a possible 100.
The minimum required to justify an all-way stop control is 45 points.

INTERSECTION DIAGRAM:



ALL-WAY STOP WARRANT SUMMARY

LOCATION	Auburn Avenue and Elmhurst Street		PAGE
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RECOMMENDATIONS:

This intersection received a total of 49 points out of a possible 100 points, where a minimum of 45 points are required to justify the installation of an all-way stop control. Also, Criteria 3 - Pedestrian Volume received the maximum points allowed. This intersection is adjacent to Tiffany Elementary School and during the peak hour monitored, 51 pedestrians crossed Elmhurst Street after school. Therefore, staff recommends the installation of the all-way stop at this intersection.

REMARKS: